TMDL for Dissolved Solids in Petronila Creek

Petronila Creek Above Tidal (Segment 2204) Stakeholders' Meeting

December 9, 2003

EA Engineering, Science, and Technology, Inc.

Why conduct Total Maximum Daily Load (TMDL) study on Petronila Creek?

- Petronila Creek does not meet water quality standards, is designated as “impaired” and was placed on the CWA Section 303(d) list.
- All 303(d) listed water bodies are required to have TMDLs that will achieve water quality standards.
- Water quality standards are developed to protect aquatic life and other beneficial uses.

TCEQ Chapter 307.7
Petronila Creek
Site-specific water quality criteria

Segment	Cl^{-1} mg/L	SO_4^{-2} mg/L	TDS mg/L
2204 Petronila Creek	1,500	500	4,000

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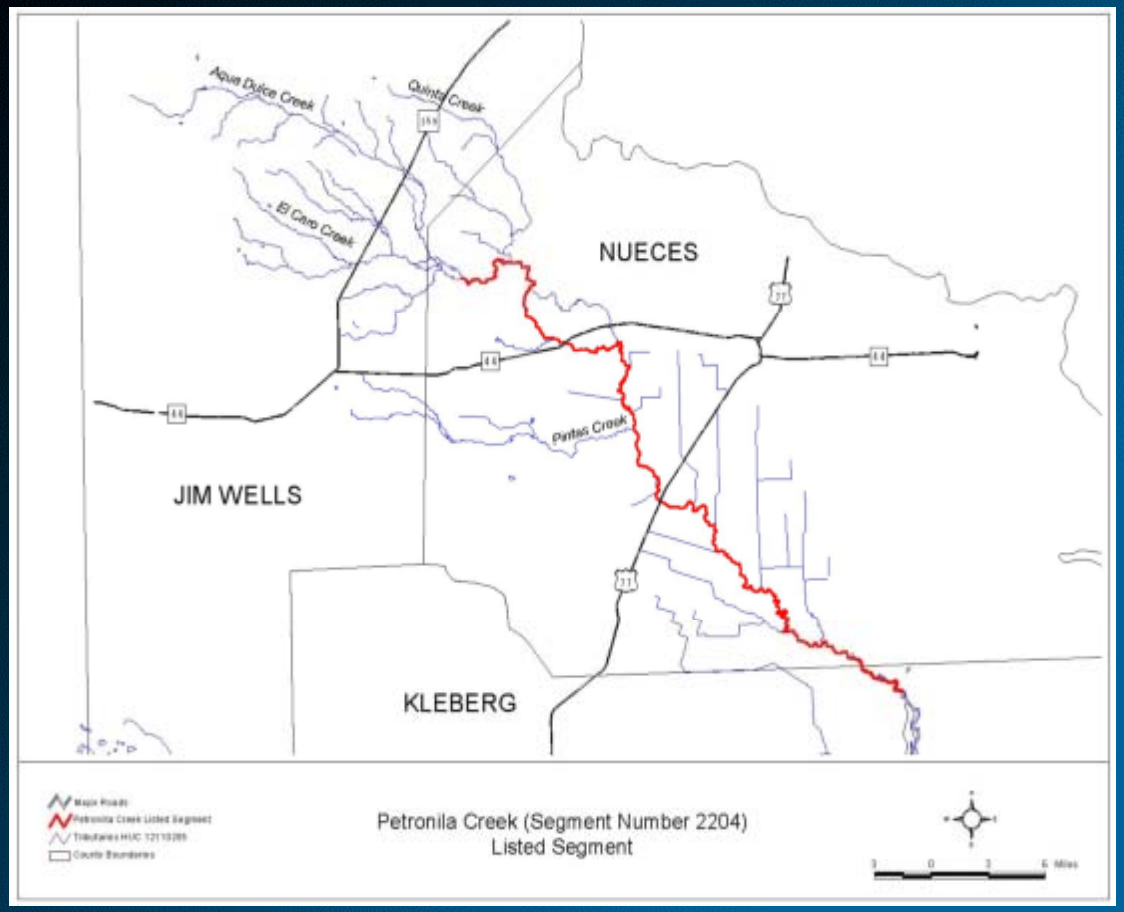
Segment 2204 - Petronila Creek

- Placed on the TCEQ's 2000 Clean Water Act (CWA) Section §303(d) list because chloride, sulfate,and total dissolved solids exceeded 1,500 mg/L, 500 mg/L, and 4,000 mg/L respectively.



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Why are Chloride, Sulfate, and TDS Targeted in this TMDL?

- Chloride in high concentrations can have adverse effects on water taste, cause health problems in humans, and deterioration of plumbing.
- Sulfate in high concentrations can cause taste and odor problems in drinking water.
- TDS can be toxic to freshwater aquatic life.

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Water Quality Parameters

- Water quality parameters:
  - Chloride
  - Sulfate
  - Total Dissolved Solids (TDS)

- Field parameters
  - pH
  - Dissolved Oxygen (D.O.)
  - Specific Conductivity
  - Water Temperature
  - Salinity

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Monitoring Plan and Monitoring Schedule - Goals

- Establish procedures for data collection and analysis,
- Collect water samples to identify potential sources,
- Coordinate data collection and interpretation with the TCEQ, and
- Provide sufficient data for TMDL analysis

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Monitoring Plan and Monitoring Schedule

- Sampling and Analysis Plan (SAP) was finalized in October 2002.
- Monitoring began in January 2003 upon the approval of the Quality Assurance Project Plan (QAPP) in October 2002.
- Water quality monitoring included:
  - Chemical monitoring (under range of stream flows)
  - Streamflow monitoring
  - Wet weather monitoring (runoff to segment)
  - Intensive monitoring (point source inputs)

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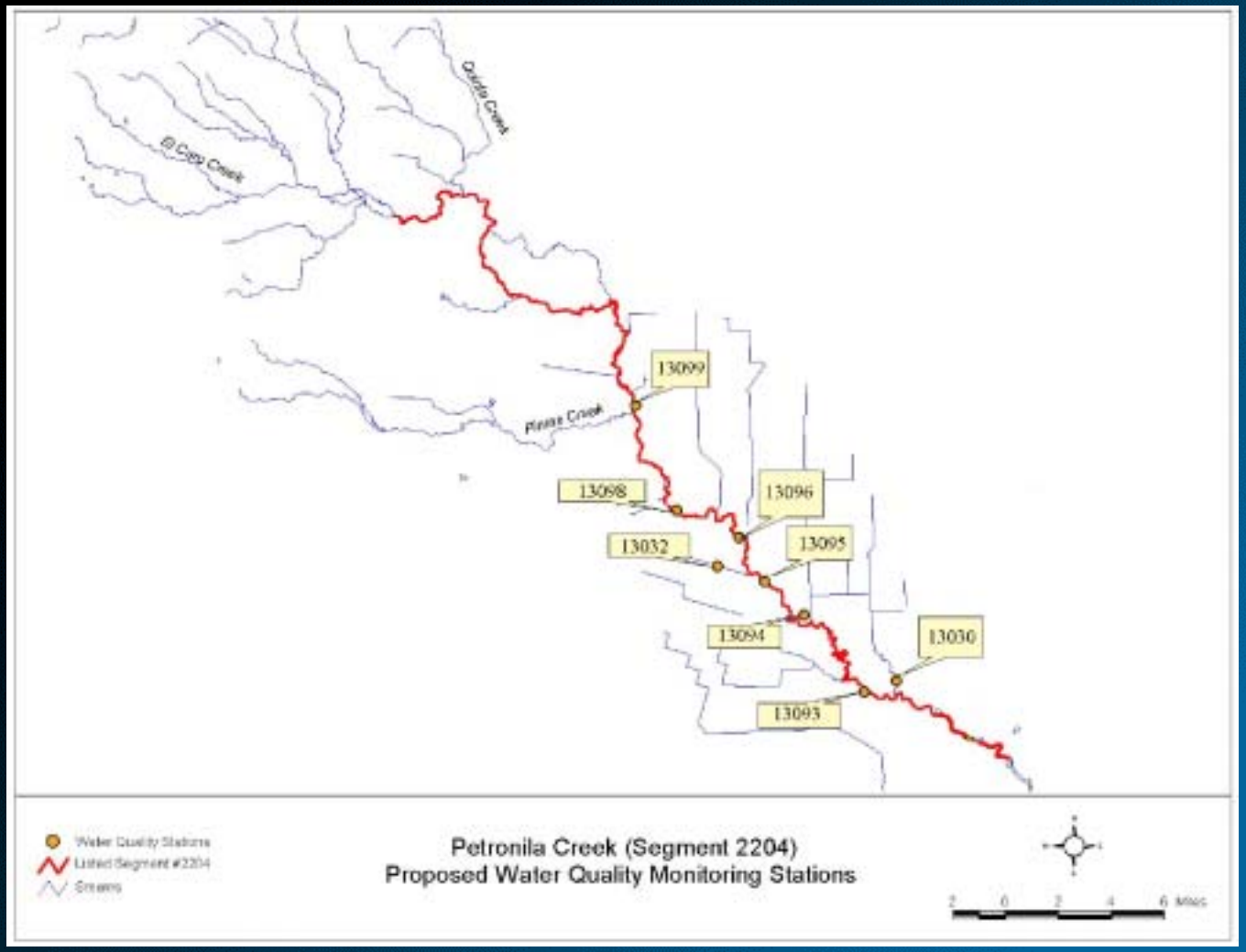
Monitoring Stations



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Water Quality Monitoring - Photos

Station 13030 - Stream flow monitoring

Station 13094 - Stream flow monitoring

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Water Quality Monitoring - Photos

Station 13030 - Creek during low flow

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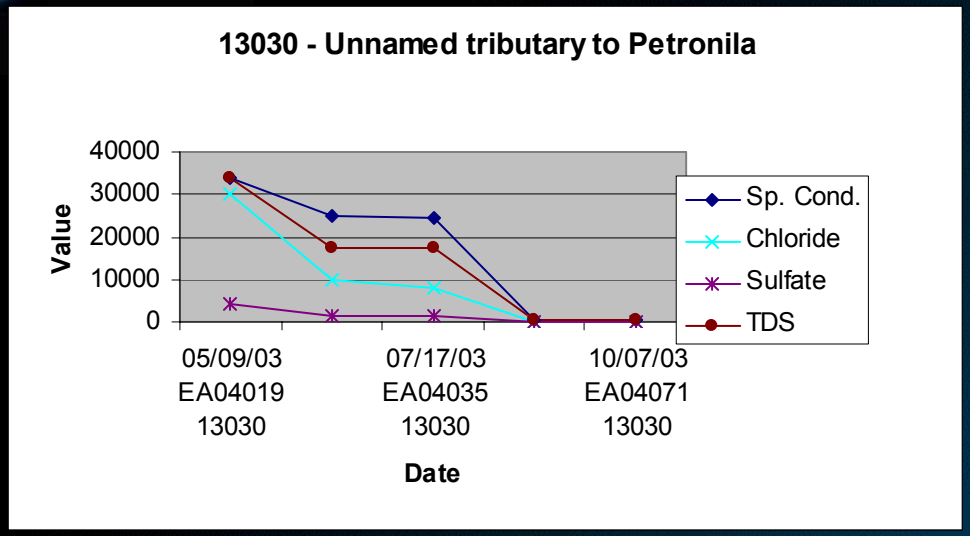
Water Quality Monitoring - Photos

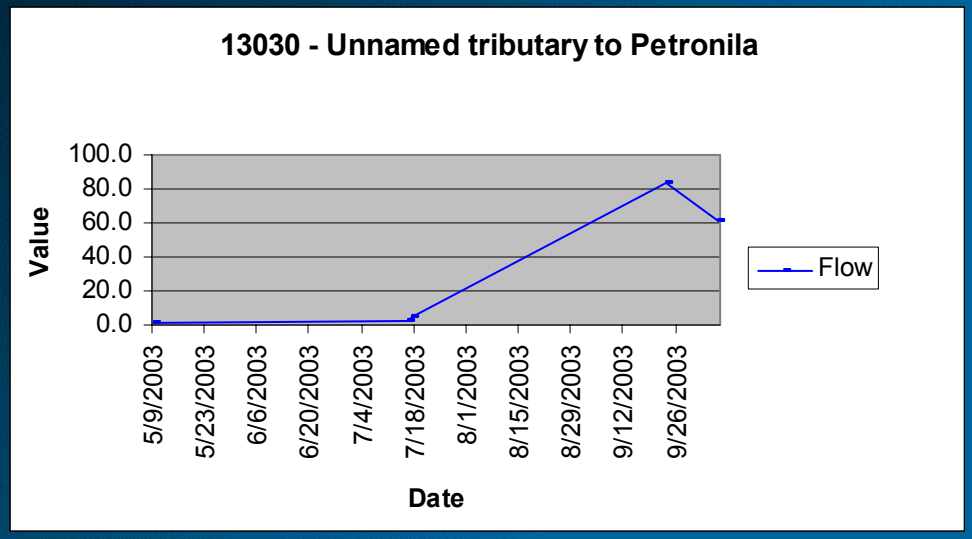
Stream flow monitoring

Water quality monitoring

Summary Water Quality data for Petronila Creek



Station	WQ Standard	Range	
13030	Chloride	60	30000
	Sulfate	42	4170
	TDS	360	34000
	Conductivity	497	33890



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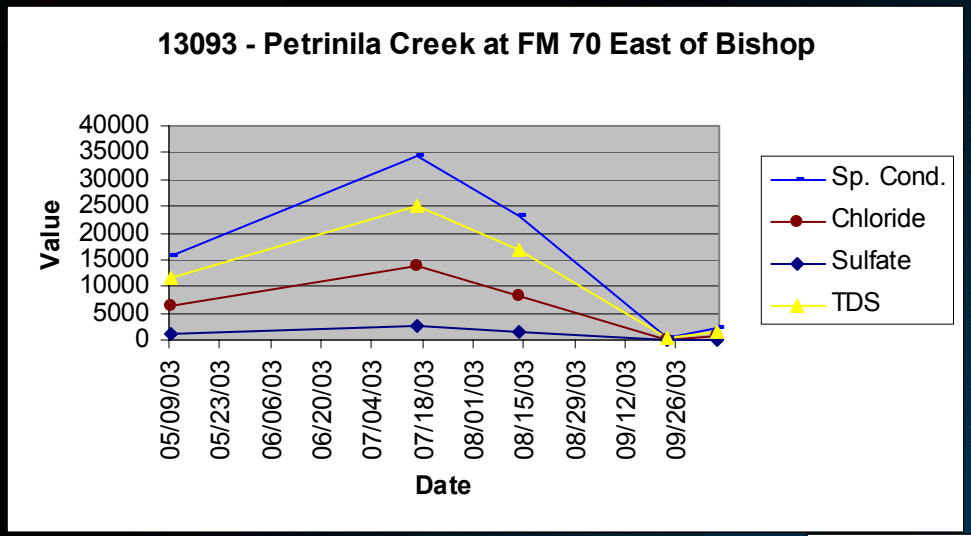
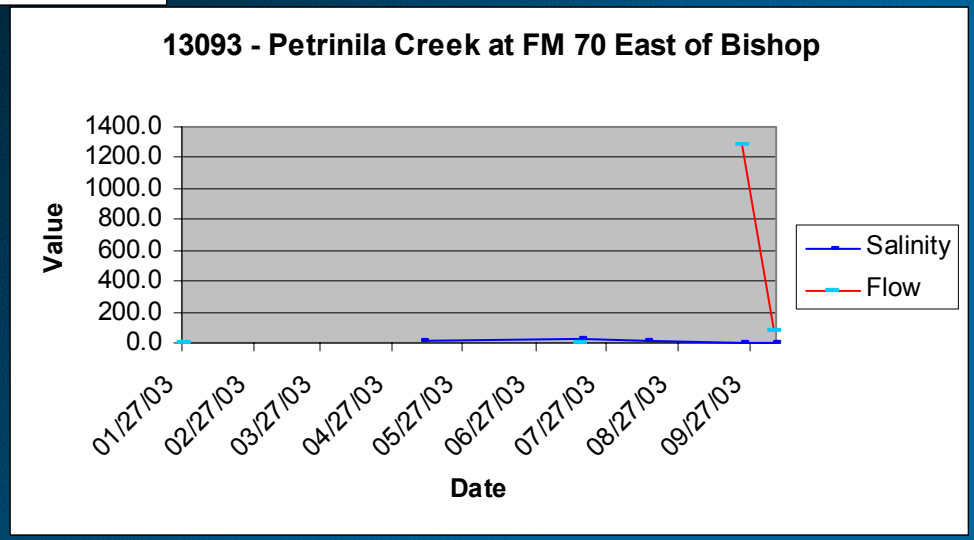


Station	WQ Standard	Range	
13093	Chloride	14	13800
	Sulfate	8	2600
	TDS	240	25100
	Conductivity	247	34510



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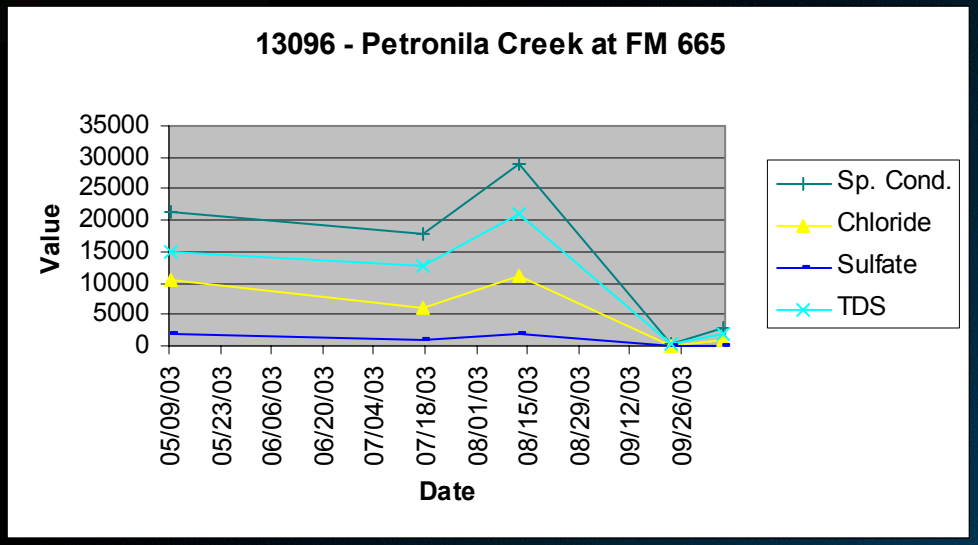
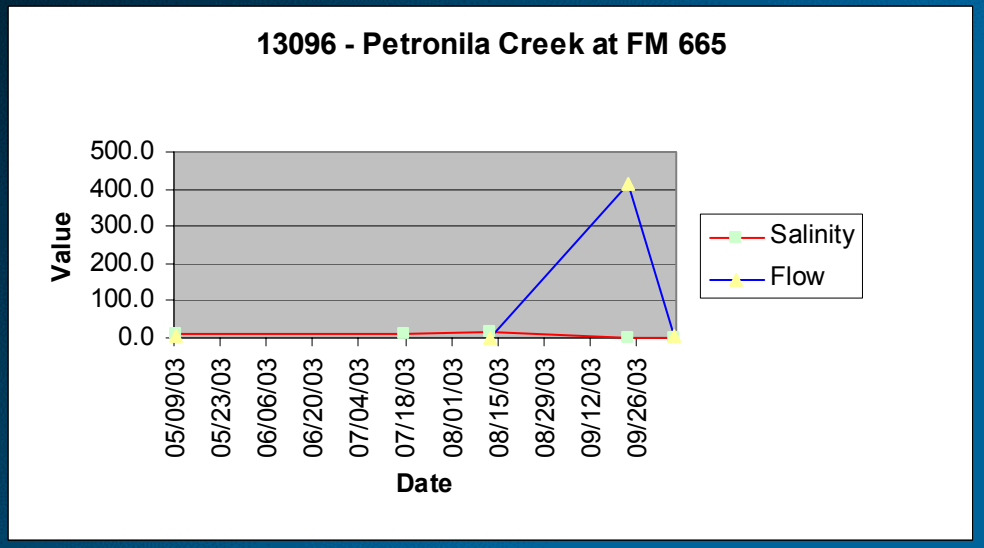


Station	WQ Standard	Range	
13096	Chloride	7	11000
	Sulfate	3	2000
	TDS	190	20900
	Conductivity	193	29100



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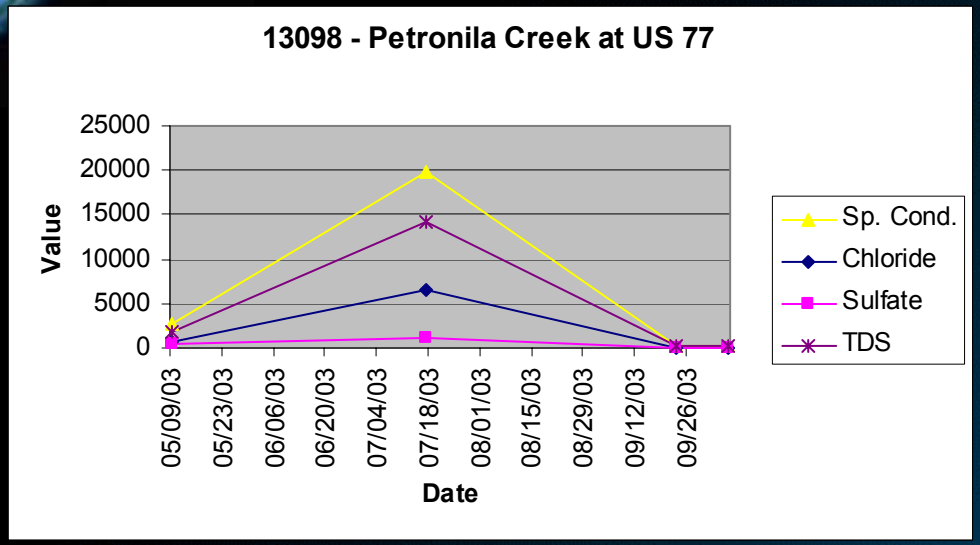
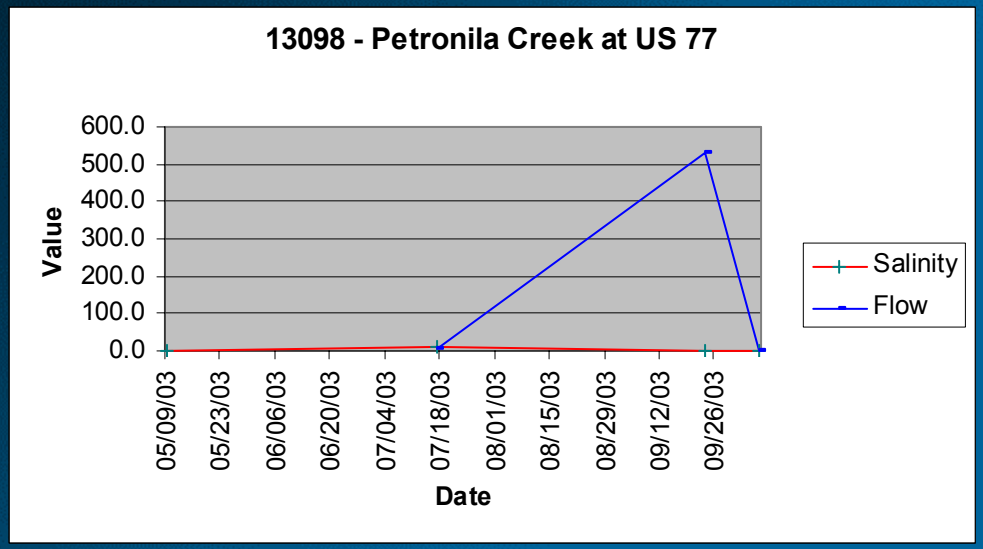


Station	WQ Standard	Range	
13098	Chloride	5	6500
	Sulfate	3	1210
	TDS	180	14100
	Conductivity	182	19740



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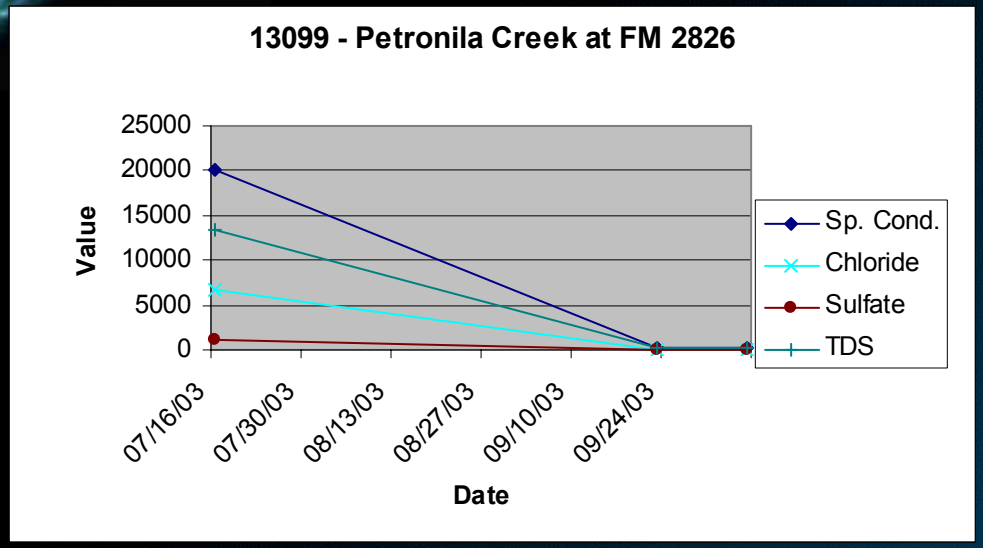
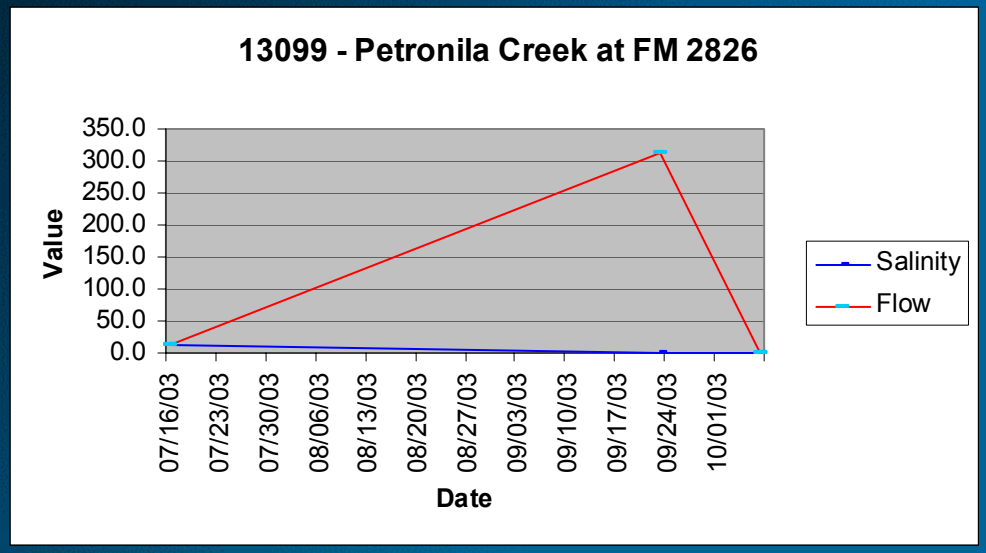


Station	WQ Standard	Range	
13099	Chloride	4	6600
	Sulfate	2	1140
	TDS	180	13400
	Conductivity	153	20150



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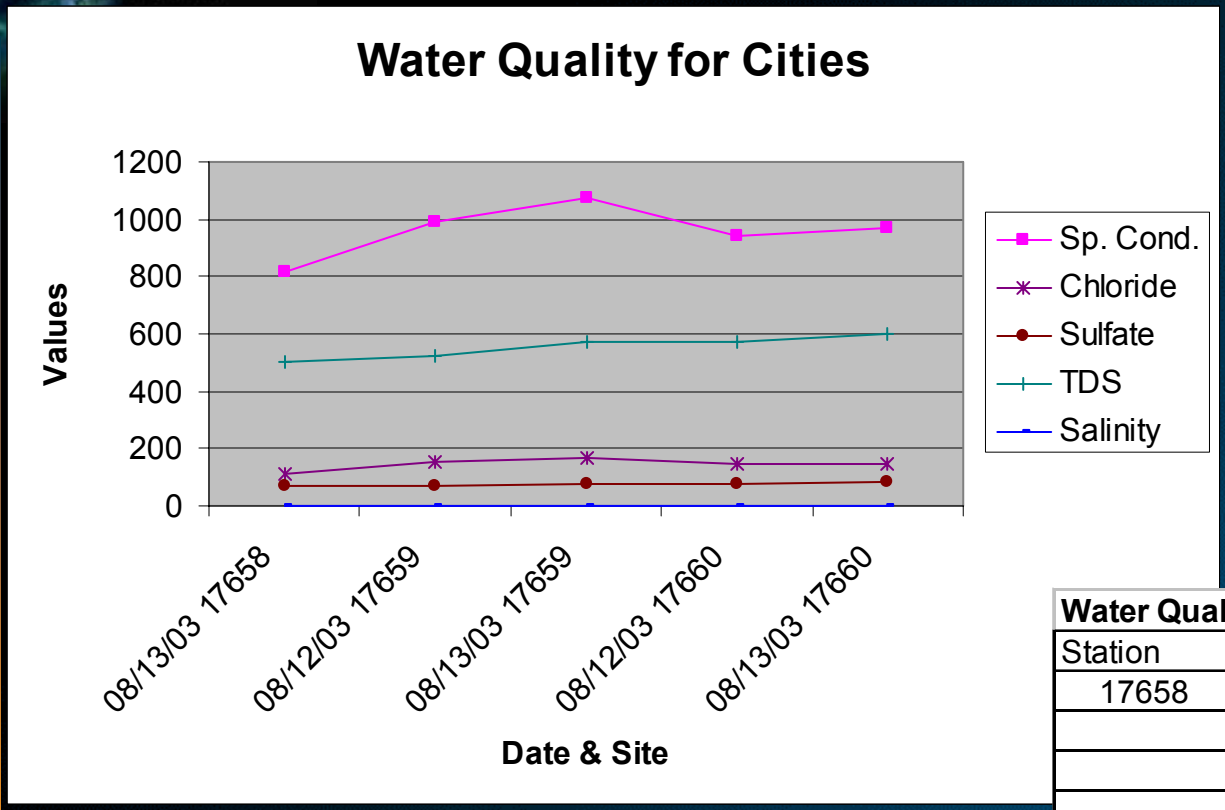

Water Quality for Cities			
Station	WQ Standard	Range	
17658	Chloride	110	120
	Sulfate	60	67
	TDS	210	500
	Conductivity	813	821
17659	Chloride	152	170
	Sulfate	70	79
	TDS	520	570
	Conductivity	990	1074
17660	Chloride	145	150
	Sulfate	80	86
	TDS	570	600
	Conductivity	945	970

EA Contacts

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